2.0 Remediation Status and Compliance Summary

This chapter provides a summary of CERCLA remediation activities in 2008 and summarizes compliance activities with other applicable environmental laws, regulations, and legal agreements. CERCLA is the primary driver for environmental remediation of the Fernald Preserve.

EPA and OEPA enforce the environmental laws, regulations, and legal agreements governing work at the Fernald Preserve. EPA develops, promulgates, and enforces environmental protection regulations and technology-based standards. EPA regional offices and state agencies enforce these regulations and standards by review of data collected at the Fernald Preserve. EPA Region 5 has regulatory oversight of the CERCLA process at the Fernald Preserve, with active participation from OEPA.

For some programs, such as those under the Resource Conservation and Recovery Act (RCRA), as amended, the Clean Air Act, as amended (excluding NESHAP compliance), and the Clean Water Act, as amended, EPA has authorized the State of Ohio to act as the primary enforcement authority. For these programs, Ohio promulgates state regulations that must be at least as stringent as federal requirements. Several legal agreements among DOE, EPA Region 5, and OEPA identify site-specific requirements for compliance with the regulations. To comply with these regulations, DOE Headquarters issues directives to its field and area offices and conducts audits to ensure compliance with all regulations.

2.1 CERCLA Remediation Status

In October 2006, remedial actions were completed for four of the five operable units. As of October 29, 2006, the only active remedy implementation efforts remaining involved the continuation of the groundwater remedy under Operable Unit 5. Other activities under CERCLA during 2008 involved monitoring the performance of the completed remedies under Operable Units 1, 2, 3, and 4, administrative activities related to finalizing the *Interim Remedial Action Report for Operable Unit 5* (DOE 2008b), and implementing the requirements of the LMICP.

All cleanup-related CERCLA documentation, including a copy of the Administrative Record, is available to the public at the Public Environmental Information Center, located at 10995 Hamilton Cleves Highway in Harrison, Ohio, and is open Monday through Thursday, 9:00 a.m. to 4:00 p.m. A copy of the Administrative Record is also located at EPA's Region 5 office in Chicago, Illinois.

The completion and closure of a National Priorities List (NPL) site encompasses several milestones and specific documentation requirements for each milestone completed (EPA 2000). These milestones begin with remedial action completion and end with deletion from the NPL and include:

- Remedial action completion (Final or Interim Remedial Action Reports).
- Construction completions (Preliminary Closeout Report)—all construction activities are complete, immediate threats are addressed, and long-term threats are under control.

- Site completion (Final Closeout Report)—all site cleanup goals are met, all Records of Decision are complete, institutional controls are in place, and site conditions are protective of human health and the environment.
- Site deletion from the NPL (Notice of Intent to Delete).

Final Remedial Action Reports have been prepared and approved by both EPA and OEPA for Operable Units 1, 2, 3 and 4. The *Interim Remedial Action Report for Operable Unit 5* was approved by EPA in August 2008. That report details the ongoing aquifer restoration activities and provides information indicating that all required groundwater infrastructure has been installed and is functioning as designed. Further, the report provides information that all soils have been remediated (except those associated with the groundwater infrastructure) and that the OSDF is functioning as designed. Operable Unit 5 will remain open until a future final Remedial Action Report for Operable Unit 5 has been prepared. This report will be developed once groundwater actions are complete, and all soils and infrastructure associated with the groundwater remedy have been adequately addressed (estimated completion date in 2026, based on modeling projections). EPA issued the *Preliminary Closeout Report* (EPA 2006) in December 2006.

CERCLA also requires a 5-year review process of remedial actions implemented under the signed Record of Decision for each operable unit. The purpose of a 5-year review is to determine, through evaluation of performance of the selected remedy, whether the remedy at a site remains protective of human health and the environment. The first 5-year review report for the Fernald Preserve (DOE 2001c) was approved by EPA in September 2001. The second 5-year report was submitted in April 2006 (DOE 2006b) and approved by EPA in July 2006.

CERCLA remediation highlights during 2008 included the following:

- No remediation activities were conducted for Operable Units 1, 2 and 3. Final Remedial Action Reports have been approved for each of these operable units.
- The performance of the OSDF was satisfactory during 2008. The cap underwent four formal inspections. Leachate generation has continued to decline, and leakage is significantly less than established action levels. Cap performance is discussed further in Chapter 7, and leachate/leak detection performance is discussed in Chapter 3.
- Under Operable Unit 4, Silos 1 and 2 treated waste material remains in interim storage and in safe configuration at the Waste Control Specialists (WCS) facility in Andrews, Texas. A permanent disposal license was issued to WCS in May 2008 and it is anticipated that final disposal of this material can occur by November 2009.
- Figure 2−1 indicates those soil areas that remain uncertified pending the end of the groundwater remedy and the decontamination and decommissioning of the related facilities and the associated utilities. Elevated uranium concentrations persist in surface water in an area adjacent to former Waste Pit 3. No specific actions other than continued monitoring were conducted in 2008. This issue is further explained in Chapter 4.
- Ecological restoration of the entire property continued during 2008, and required site inspections were performed. There were no instances of breaches in or violations of the institutional controls established in the LMICP. Further discussion of the site inspection process is included in Chapter 7.

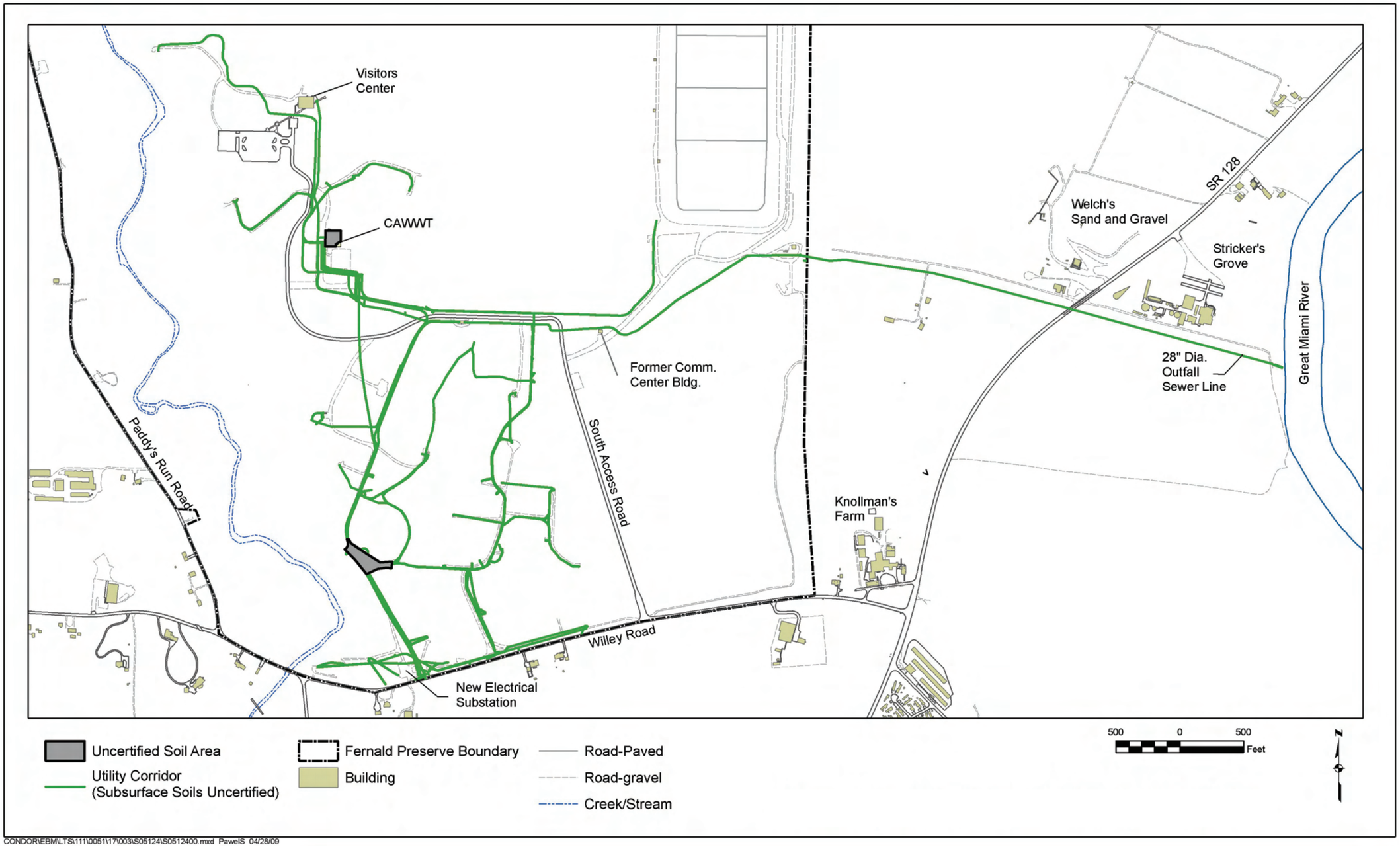

Figure 2–1. Uncertified Areas and Subgrade Utility Corridors

This page intentionally left blank

OSDF After Completion of all Caps

The Converted Advanced Wastewater Treatment Facility

The ongoing groundwater remedy resulted in a total of 2,320 million gallons (M gal) (8,781 million liters [M liters]) of groundwater extracted from the Great Miami Aquifer, and 677 lb (307 kg) of uranium were removed from the aquifer in 2008. Chapter 3 discusses groundwater monitoring and remediation performance.

2.2 Summary of Compliance with Other Requirements

CERCLA requires compliance with other laws and regulations as part of remediation of the Fernald Preserve. These requirements are referred to as applicable or relevant and appropriate requirements (ARARs). ARARs that are pertinent to remediation of the Fernald Preserve are specified in the Record of Decision for each operable unit. This section of the report highlights some of the major requirements related to environmental monitoring and waste management and describes how the Fernald Preserve complied with these requirements in 2008.

The regulations discussed in this section have been identified as ARARs within the Records of Decision. The Fernald Preserve must comply with these regulations while site remediation under CERCLA is under way; compliance is enforced by EPA and OEPA. Some of these requirements include permits for controlled releases, which are also discussed in this section.

2.2.1 RCRA

RCRA regulates the treatment, storage, and disposal of hazardous waste and mixed waste that contains radioactive and hazardous waste components. These wastes are regulated under RCRA and Ohio hazardous waste management regulations; therefore, the Fernald Preserve must comply with legal requirements for managing hazardous and mixed wastes. OEPA has been authorized by EPA to enforce its hazardous waste management regulations in lieu of the federal RCRA program. In addition, hazardous waste management is subject to the 1988 Consent Decree, the 1993 Stipulated Amendment between the State of Ohio and DOE, and a series of Director's Final Findings and Orders issued by OEPA.

In 1996, OEPA issued Director's Findings and Orders to integrate RCRA closure requirements with CERCLA response actions for the Fernald Preserve hazardous waste management units (HWMUs). Based on remediation being completed, and based on OEPA review of information in the *Interim Remedial Action Report for Operable Unit 5*, OEPA determined in June 2008 that all HWMUs under the purview of the 1996 Director's Findings and Orders had met the State of Ohio HWMU closure performance standards and that DOE had achieved final closure of the facility per Ohio Administrative Code 3745-66-15, "Ohio Closure and Post-Closure Under Interim Standards".

Although the RCRA regulations remain applicable, the Fernald Preserve had no hazardous waste treatment, storage, or disposal activities during 2008.

2.2.1.1 RCRA Property Boundary Groundwater Monitoring

The Director's Findings and Orders for Groundwater, which were signed September 10, 1993, described an alternate monitoring system for RCRA groundwater monitoring. A revision of this document was approved on September 7, 2000, to align with the groundwater monitoring

strategy identified in the IEMP. The Property Boundary Groundwater Monitoring program is discussed in Chapter 3.

2.2.1.2 Waste Management

Wastes managed during 2008 were limited to small quantities of low-level radioactive wastes and uncontaminated solid wastes.

2.2.2 Clean Water Act

Under the Clean Water Act, as amended, the Fernald Preserve is governed by the National Pollutant Discharge Elimination System (NPDES) regulations that require the control of discharges of nonradiological pollutants to waters of the State of Ohio. The NPDES permit, issued by the State of Ohio, specifies discharge and sample locations, sampling and reporting schedules, and discharge limitations. The Fernald Preserve submits monthly reports on NPDES activities to OEPA demonstrating compliance with stipulated discharge limits. There were no instances of noncompliance during 2008. Chapter 4 discusses the surface water and treated effluent information in detail.

2.2.3 Clean Air Act

NESHAP Subpart H imposes a limit of 10 mrem/yr (0.1 mSv/yr) on the effective dose equivalent to the maximally exposed individual (MEI) as a result of all air emissions (with the exception of radon) from the facility in a single year. For 2008, the Fernald Preserve was in compliance with the NESHAP dose limit as determined by ambient air monitoring at the Fernald Preserve's boundary. Appendix D contains the NESHAP Annual Report for 2008.

OEPA is authorized to enforce the State of Ohio's air standards for particulate matter at the Fernald Preserve. Compliance is accomplished by implementing the Fugitive Dust Control Policy negotiated between DOE and OEPA in 1997. The policy allows for visual observation of fugitive dust and implementation of dust control measures.

2.2.4 Superfund Amendments and Reauthorization Act of 1986

The Superfund Amendments and Reauthorization Act of 1986 (SARA) amended CERCLA and was enacted, in part, to clarify and expand CERCLA requirements. SARA Title III is also known as the Emergency Planning and Community Right to Know Act.

A letter was submitted to OEPA, to the local emergency planning committees of Hamilton and Butler Counties, and to the Crosby Township Fire Department on February 24, 2008, stating that the Fernald Preserve was not required to submit the SARA Title III, Section 312, Emergency and Hazardous Chemical Inventory Report for 2008. During 2008 there were no chemicals stored on the Fernald Preserve above threshold planning quantities.

Another SARA Title III report, the Section 313 Toxic Chemical Release Inventory Report (Form R), is required if quantities of chemicals released at the Fernald Preserve exceed an applicable threshold for any SARA 313 chemical. If required, the Toxic Chemical Release Inventory Report lists routine and accidental releases and information about the activities, uses,

and waste for each reported toxic chemical. No chemical releases have exceeded the threshold for several years. On June 25, 2008, a negative survey report was submitted to OEPA documenting that no such chemicals above thresholds were on site at any time during 2007. No chemical exceeded a reporting threshold during 2007.

Also under SARA Title III, any off-site release meeting or exceeding a reportable quantity as defined by SARA Title III, Section 304, requires that immediate notifications be made to local emergency planning committees and the state emergency response commission. Notifications are also made to the National Response Center and other appropriate federal, state, and local regulatory entities. All releases that might occur at the Fernald Preserve are evaluated and documented to ensure that proper notifications are made in accordance with SARA, and under CERCLA Section 103, RCRA, the Toxic Substances Control Act, the Clean Air Act, the Clean Water Act, and Ohio environmental laws and regulations. There were no releases at the Fernald Preserve that met the reporting criteria under CERCLA during 2008.

2.2.5 Other Environmental Regulations

The Fernald Preserve is also required to comply with other environmental laws and regulations in addition to those described above. Table 2−1 summarizes compliance with each of these requirements for 2008.

2.2.6 Other Permits

Certain environmental laws are implemented through permits. However, there are no other permits currently in effect other than the Fernald Preserve's permit for discharging water under NPDES regulations discussed in Section 2.2.2.

2.2.7 Pollution Prevention and Source Reduction

The Fernald Preserve is actively involved in an effort to reduce solid, hazardous, radioactive, and mixed waste generation and to eliminate or minimize pollutants released to all environmental media. Various waste streams were recycled during 2008, including:

- 3,607 lb (1,636 kg) of paper
- 11,786 lb (5,346.0 kg) of cardboard
- 107 lb (48.5 kg) of plastic
- 15 lb (6.8 kg) of glass
- 153 lb (69.4 kg) of aluminum
- 80 lb (36 kg) of electronic equipment (universal waste)
- 62 toner cartridges
- 91.5 tons of commingled material from Visitors Center remodeling
- 9.1 tons of steel from Visitors Center remodeling

Table 2–1. Compliance with Other Environmental Regulations

Regulation and Purpose	Background Compliance Issues	2007 Compliance Activities
Toxic Substances Control Act		
Regulates the manufacturing, use, storage, and disposal of toxic materials, including polychlorinated biphenyl (PCB) and PCB items.	The last routine Toxic Substances Control Act inspection of the Fernald Preserve's program was conducted by EPA Region 5 on September 21, 1994. No violations of PCB regulations were identified during the inspection.	No PCB liquids were shipped in 2008.
Ohio Solid Waste Act		
Regulates infectious waste.	The Fernald Preserve was registered with OEPA as a generator of infectious waste (generating more than 50 pounds [23 kg] per month) until December 6, 1999, when OEPA concurred with the Fernald Preserve's qualification as a small quantity generator.	No infectious waste activities were required in 2008.
Federal Insecticide, Fungicide, and Rodenticide Act		
Regulates the registration, storage, labeling, and use of pesticides (such as insecticides, herbicides, and rodenticides).	The last inspection of the Federal Insecticide, Fungicide, and Rodenticide Act program conducted by EPA Region 5 on September 21, 1994, found the Fernald Preserve to be in full compliance with the requirements mandated by the Federal Insecticide, Fungicide, and Rodenticide Act.	Pesticide applications at the Fernald Preserve were conducted according to federal and state regulatory requirements.
National Environmental Policy Act		
Requires the evaluation of environmental, socioeconomic, and cultural impacts before any action, such as a construction or cleanup project, is initiated by a federal agency.	An Environmental Assessment for proposed final land use was issued for public review in 1998. It was prepared under DOE's guidelines for implementation of National Environmental Policy Act, 10 CFR 1021. The assessment requires consulting the public before any decisions on land use are made; it includes previous DOE commitments.	No National Environmental Policy Act activities were required in 2008.
Endangered Species Act		
Requires the protection of any threatened or endangered species found at the site as well as any critical habitat that is essential for the species' existence.	Ecological surveys conducted by Miami University and DOE, in consultation with the Ohio Department of Natural Resources and the U.S. Fish and Wildlife Service, have established the following list of threatened and endangered species and their habitats existing on site: Cave salamander, state-listed endangered—marginal habitat, none found; Sloan's crayfish, state-listed threatened—found on northern sections of Paddys Run; Indiana brown bat, federally listed endangered—found in riparian areas along Paddys Run.	A survey was conducted for the presence of Indiana bat in several locations at the Fernald Preserve. This effort was conducted to see if modifications to the former rail trestle attracted bats. No Indiana bats were identified. A more detailed discussion can be found in Chapter 7.

Table 2–1 (continued). Compliance with Other Environmental Regulations

Regulation and Purpose	Background Compliance Issues	2007 Compliance Activities
Floodplains/Wetlands Review Requirements		
DOE regulations require a floodplain/wetlands assessment for DOE construction and improvement projects.	A wetlands delineation of the Fernald Preserve, completed in 1992 and approved by the U.S. Army Corps of Engineers in August 1993, identified 36 acres (15 hectares) of freshwater wetlands on the Fernald Preserve property.	No assessments were performed in 2008.
National Historic Preservation Act		
Establishes a program for the protection, maintenance, and stewardship of federal prehistoric and historic properties.	The Fernald Preserve is located in an area of sensitive historic and prehistoric cultural resources that are eligible for or on the National Register of Historic Places. These cultural resources include historic structures, buildings, and bridges, plus Native American villages and campsites.	No cultural resource surveys were necessary in 2008. Monitoring for unexpected discoveries was conducted during sitewide field activities.
Native American Graves Protection and Repatriation Act		
Establishes a means for Native Americans to request the return or "repatriation" of human remains and other cultural items. Federal agencies must return human remains, associated funerary objects, sacred objects, and objects of cultural patrimony to the Native American nations or tribes with cultural affiliation to the remains or material.	Native American remains have been discovered during remediation activities at the Fernald Preserve. Native American remains and artifacts have been removed or left in place, with consultation from Native American nations, tribes, and groups.	No Native American remains were discovered or repatriated to Native American nations, tribes, or groups in 2008. As stated above, monitoring for unexpected discoveries was conducted during sitewide field activities.
Natural Resource Requirements Under CERCLA and Executive Order 12580		
Requires DOE to act as a trustee (i.e., guardian) for natural resources at its federal facilities.	DOE and the other trustees, which include the U.S. Department of the Interior, the U.S. Fish and Wildlife Service, OEPA, the Ohio Attorney General's Office, and EPA, meet regularly to discuss potential impact to natural resources and to coordinate trustee activities. The trustees also interact with the Fernald Citizens Advisory Board and Community Reuse Organization.	In November 2008, the State of Ohio and DOE reached a settlement of the 1986 Natural Resource injury claim at Fernald. While the components of restoration had been established through a 2001 Memorandum of Understanding (DOE 2001d) and restoration of the site continues, the State of Ohio and DOE settled outstanding issues such as the payment of monetary penalties, establishment of environmental covenants, and a mutually agreed Natural Resource Restoration Plan (NRRP), which is Appendix B of the *Partial Consent Decree Resolving Ohio's Natural Resource Damage Claim against DOE* (State of Ohio 2008).

The Fernald Preserve's affirmative procurement program involves source reduction and the use of EPA-designated materials to increase the market for recovered materials. In accordance with Executive Order 13423, *Strengthening Federal Environmental, Energy and Transportation Management*, the Fernald Preserve uses 30 percent post-recycled-content copier paper. The Fernald Preserve generated and submitted an annual report demonstrating compliance with this order in December 2008.

As part of the *Annual Waste Reduction Report* under DOE Order 450.1A, the Fernald Preserve generated and submitted a summary report of waste generated and pollution prevention progress in December 2008.

2.2.8 Site-Specific Regulatory Agreement

2.2.8.1 Federal Facility Compliance Agreement

In July 1986, DOE entered into a Federal Facility Compliance Agreement (FFCA) with EPA, which requires the Fernald Preserve to:

- Maintain a sampling program for the South Plume extraction wells and report the results to the EPA, OEPA, and Ohio Department of Health. The sampling program conducted to address this requirement has also been modified over the years and is currently governed by an agreement reached with EPA and OEPA on May 1, 1996. These data are reported through IEMP reports (refer to Appendix A).
- Maintain a continuous sample collection program for radiological constituents at the treated effluent discharge points and report the results to EPA, OEPA, and the Ohio Department of Health. The sampling program to address this requirement has been modified over the years and is currently governed by an agreement reached with EPA and OEPA that became effective May 1, 1996. These data are reported through IEMP reports (refer to Appendix B).

2.2.8.2 Federal Facility Agreement, Control, and Abatement of Radon-222 Emissions

The Federal Facility Agreement between DOE and EPA, signed in November 1991, ensures that DOE takes all necessary actions to control and abate radon-222 emissions at the Fernald Preserve, under the authority of 40 CFR 61 Subpart Q. This agreement acknowledged that Silos 1 and 2 exceed the radon flux rate of 20 picocuries per square meter per second. But it allowed the Fernald Preserve to address this exceedance by implementing a removal action (installation of a bentonite cap in 1991) to take radon emissions from the silos to a level as low as reasonably achievable (ALARA), and to attain the NESHAP Subpart Q standard upon completion of final remediation. Chapter 5 further discusses the results of the radon monitoring program for 2008.

2.2.9 Environmental Management Systems Requirement

DOE requires that sites develop and implement an Environmental Management System as a means of systematically planning, implementing, evaluating, and improving processes and actions undertaken to achieve environmental goals. This requirement is specified in DOE Order 450.1A, *Environmental Protection Program*.

The implementation of an Environmental Management System ensures that sound stewardship practices protective of the air, water, land, and other natural and cultural resources potentially affected by operations are employed throughout the project. An Environmental Management System is a systematic process for reducing the environmental impacts resulting from DOE and contractor work activities, products, and services and directs work to occur in a manner that protects workers, the public, and the environment. The process adheres to "Plan-Do-Check-Act" principles, mandates environmental compliance, and integrates green initiatives into all phases of work, including scoping, planning, construction, subcontracts, and operations. Proposed site maintenance activities will be assessed for opportunities to improve environmental performance and sustainable environmental practices. Some areas for consideration include reusing and recycling products or wastes, using environmentally preferable products (i.e., products with recycled content, such as office furniture; products with reduced toxicity; and energy efficient products), using alternative fuels and renewable energy, and making environmental habitat improvements.

2.3 Split Sampling Program

Since 1987, DOE has participated in the split sampling program with the State. Split samples are obtained when technicians alternately add portions of a sample to two individual sample containers. This collection method helps ensure that both samples are as identical as possible. The split samples are then submitted to two analytical laboratories; this allows for an independent comparison of data to ascertain laboratory analysis and field quality assurance. In addition to split sampling, OEPA performs independent sampling.

In 2008, DOE and OEPA cooperated in the split sampling program. Samples of groundwater were split, and the results are provided in Table 2−2. (Split sample locations are provided in Figure 2−2)

Table 2–2. 2008 DOE/OEPA Groundwater Split Sampling Comparison

Sample Location[a]	2008 Sample Date	Constituent	DOE Result (µg/L)	OEPA Result (µg/L)	FRL (µg/L)
2060	April	Total Uranium	39.5	40.1	30
2060	October	Total Uranium	91.5	82.0	30
13	April	Total Uranium	19.9	19.7	30
13	October	Total Uranium	19.2	19.0	30
14	April	Total Uranium	3.5	3.3	30
14	October	Total Uranium	3.5	3.15	30

[a]Refer to Figure 2-2 for groundwater split sample locations.

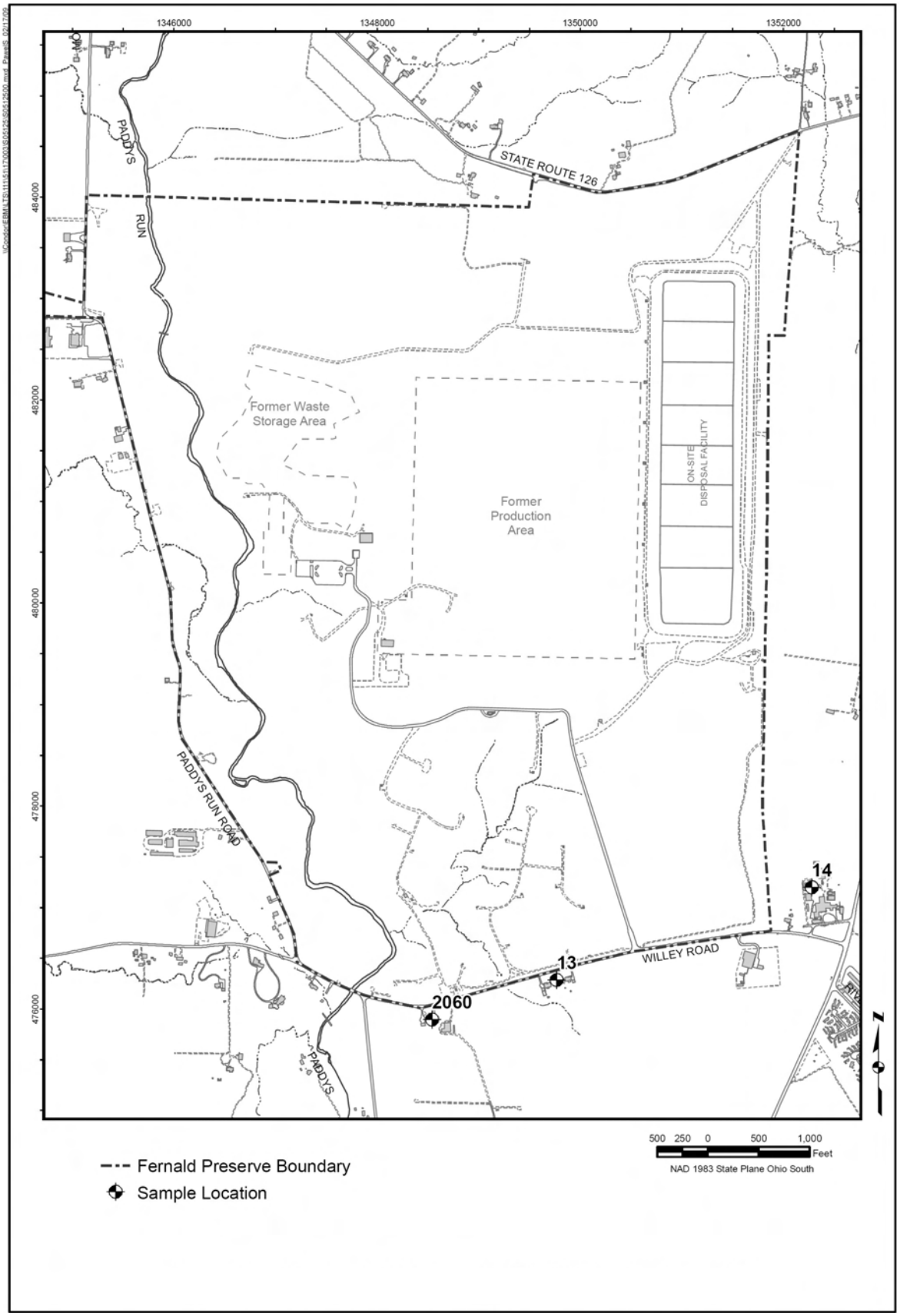

Figure 2–2. 2008 DOE and OEPA Groundwater Split Sample Locations

This page intentionally left blank